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FRISHAUF, HOLTZ, GOODMAN & CHICK, PC
220 Fifth Avenue
16TH Floor
NEW YORK, NY 10001-7708

EXAMINER	
RALEIGH, DONALD L	
ART UNIT	**PAPER NUMBER**
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/565,043	SUZURI ET AL.	
	Examiner	Art Unit	
	DONALD L. RALEIGH	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 December 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-15 and 23-34* is/are allowed.

6)☒ Claim(s) *16-22 and 35-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

The Amendment, filed on December 17, 2009 has been entered and acknowledged by the Examiner.

Claims 1-46 are pending in the instant application.

Claim Rejections - 35 USC § 112

Applicant's amendment of **Claims 1, 5 and 9** overcomes the previous rejection of these claims and their dependent **claims 2-4, 6-8, 10-15 and 23-24**. Therefore, the rejections of these claims under 35 U.S.C. 112, 2nd paragraph have been withdrawn.

Claim Objections

Applicant's amendment of **Claims 1-22** overcomes the objections to these claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 16 and 36-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Motomatsu (US Patent No. 6,541,909)(previously cited) in view of Thompson et al (US PG Pub. No. 2003/0068528) (previously cited).

Regarding Claim 16, Motomatsu discloses in figure 2, an organic electroluminescent element (abstract, line 1) comprising an anode (2) and a cathode (6) having therebetween a light emitting layer (4) containing a phosphorescent compound, and a hole blocking layer (7) provided adjacent to the light emitting layer (4) and between the light emitting layer (4) and the cathode (6),

Although Motomatsu discloses that the material of the light emitting layer (4) and the hole blocking layer (7) are luminescent which could be phosphorescent, Motomatsu fails to specifically disclose wherein the luminescent layer (4) or the hole blocking layer (7) contain phosphorescent compounds.

In the same field of endeavor, Thompson (528) teaches using a phosphorescent compound in both the emissive layer and the hole blocking layer (Paragraph [0131], lines 7-12) to enhance the electron conduction and electron injection properties of the hole blocking layer (Paragraph [0132], lines 1-2).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to incorporate the phosphorescent material in both the emissive and hole blocking layers, as taught by Thompson (528), in the luminescent device of Motomatsu, to enhance the electron conduction and electron injection properties of the hole blocking layer.

Motomatsu, as modified by Thompson (528) fails to teach wherein an amount of light emitted from the hole blocking layer is in the range of 0.1 to 50% of an amount of light emitted from the light emitting layer.

Motomatsu, as modified by Thompson (528) discloses the claimed invention except for wherein an amount of light emitted from the hole blocking layer is in the range of 0.1 to 50% of an amount of light emitted from the light emitting layer.

It is obvious that the amount of light emitted by the hole blocking or light emitting layer is directly related to the choice of material used for these layers and the amount of this material in each layer. This is a determination easily made by one of ordinary skill in the art.

It would have been obvious to one having ordinary skill in the art, at the time the invention was made, to provide an amount of light emitted from the hole blocking layer that is in the range of 0.1 to 50% of an amount of light emitted from the light emitting layer, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art and since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice.

Regarding Claim 36 and 37, Motomatsu discloses a display/illumination comprising the organic electroluminescent element (abstract, line 1).

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Motomatsu(909) in view of Thompson (528) and further in view of Wolk et al (US PG Pub. No. 002/0197554) (previously cited).

Regarding Claim 17, Motomatsu, as modified by Thompson (528) fails to exemplify the organic electroluminescent element wherein the organic electroluminescent element further comprises a hole blocking layer provided adjacent to the hole blocking layer and between the hole blocking layer and the cathode.

In the same field of endeavor, Wolk teaches a transfer layer containing two layers both of which can be a hole blocking layer (Paragraph [0075], lines 1-15) in order that the important interfacial characteristics of the layers can be produced when the transfer unit is prepared and retained during transfer (Paragraph [0073], lines 1-6). Also, Paragraph [0007], lines 1-6 teaches that the transfer layers are between the anode and the cathode.

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to incorporate the two adjacent hole blocking layers as taught by Wolk into the electroluminescent element of Motomatsu, as modified by Thompson (528), in order to that the important interfacial characteristics of the layers can be produced when the transfer unit is prepared and retained during transfer.

Claims 18, 20, 40-41 and 44-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Motomatsu(909) in view of Thompson(528) and further in view of Kim (621).

Regarding Claim 18, Motomatsu discloses in figures 2 and 4, an organic electroluminescent element comprising an anode (2) and a cathode (6) having therebetween a light emitting layer (4) containing a luminescent compound, and an electron blocking layer (8) provided adjacent to the light emitting layer (4) (Column 6, lines 4-6 discloses that doped layer (8) may function as an electron blocking layer) and between the light emitting layer (4) and the anode (2), wherein the electron blocking layer (8) contains a luminescent compound.

Motomatsu fails to disclose that the luminescent compounds used are phosphorescent.

In the same field of endeavor, Thompson (528) teaches using a phosphorescent compound in both the emissive layer and the hole blocking layer (Paragraph [0131], lines 7-12) to enhance the electron conduction and electron injection properties of the hole blocking layer (Paragraph [0132], lines 1-2).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to incorporate the phosphorescent material in both the emissive and hole blocking layers, as taught by Thompson (528), in the luminescent device of Motomatsu, to enhance the electron conduction and electron injection properties of the hole blocking layer.

In the same field of endeavor, Kim teaches an emissive layer containing a phosphorescent compound and an electron blocking layer with the same compound (Paragraph [0060], lines 20-23 Ir(ppy)3). Using this phosphorescent compound as the luminescent compound of Motomatsu, who uses the same material in both the emissive and electron blocking layers would result in the claimed structure above. Kim fails to teach why this compound is used.

Kim discloses the claimed invention except for why this material is used.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Ir(ppy)3 for these layers, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice.

Motomatsu, as modified by Thompson and Kim fail to teach wherein an amount of light emitted from the electron blocking layer is in the range of 0.1 to 50% of an amount of light emitted from the light emitting layer.

It is obvious that the amount of light emitted by the electron blocking or light emitting layer is directly related to the choice of material used for these layers and the amount of this material in each layer. This is a determination easily made by one of ordinary skill in the art.

It would have been obvious to one having ordinary skill in the art, at the time the invention was made, to provide an amount of light emitted from the electron blocking layer is in the range of 0.1 to 50% of an amount of light emitted from the light emitting layer, since it has been held that discovering an optimum value of a result effective

variable involves only routine skill in the art and since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice.

Regarding Claim 20, Motomatsu discloses in figures 2 and 4, an organic electroluminescent element comprising an anode (2) and a cathode (6) having therebetween a light emitting layer (4) containing a luminescent compound; a hole blocking layer (7) provided adjacent to the light emitting layer (4) and between the light emitting layer (4) and the cathode (6); and an electron blocking layer (8) provided adjacent to the light emitting layer (4) and between the light emitting layer (4) and the anode (2), wherein the hole blocking layer (7) contains a luminescent compound and the electron blocking layer (8) contains a luminescent compound.

Although Motomatsu discloses that the material of the light emitting layer (4) and the hole blocking layer (7) are luminescent which could be phosphorescent, Motomatsu fails to specifically disclose wherein the luminescent layer (4) or the hole blocking layer (7) contain phosphorescent compounds.

In the same field of endeavor, Thompson (528) teaches using a phosphorescent compound in both the emissive layer and the hole blocking layer (Paragraph [0131], lines 7-12) to enhance the electron conduction and electron injection properties of the hole blocking layer (Paragraph [0132], lines 1-2).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to incorporate the phosphorescent material in both the emissive and hole blocking layers, as taught by Thompson (528), in the luminescent device of

Motomatsu, to enhance the electron conduction and electron injection properties of the hole blocking layer.

In the same field of endeavor, Kim teaches an emissive layer containing a phosphorescent compound and an electron blocking layer with the same compound (Paragraph [0060], lines 20-23 Ir(ppy)3) Using this phosphorescent compound as the luminescent compound of Motomatsu, who uses the same material in both the emissive and electron blocking layers would result in the claimed structure above. Kim fails to teach why this compound is used.

Kim discloses the claimed invention except for why this material is used.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Ir(ppy)3 for these layers, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice.

Motomatsu, as modified by Thompson (528) and Kim fails to teach that an amount of light emitted from the hole blocking layer is in the range of 0.1 to 50% of an amount of light emitted from the light emitting layer; and so that an amount of light emitted from the electron blocking layer is in the range of 0.1 to 50% of an amount of light emitted from the light emitting layer.

It is obvious that the amount of light emitted by the hole blocking layer, the electron blocking layer or light emitting layer is directly related to the choice of material used for these layers and the amount of this material in each layer. This is a determination easily made by one of ordinary skill in the art.

It would have been obvious to one having ordinary skill in the art, at the time the invention was made, to provide an amount of light emitted from the hole blocking layer or electron blocking layer is in the range of 0.1 to 50% of an amount of light emitted from the light emitting layer, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art and since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice.

Regarding Claims 40 and 44, Motomatsu discloses a display comprising the organic electroluminescent element (abstract, line 1).

Regarding Claims 41 and 45, Motomatsu discloses an illumination device comprising the organic electroluminescent element (abstract, line 1).

Claims 19 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Motomatsu(909) in view of Thompson (528) and Kim (621) and further in view of Wolk (554).

Regarding Claims 19 and 22, Motomatsu, as modified by Thompson (528) and Kim(621), fails to exemplify the organic electroluminescent element wherein the organic electroluminescent element further comprises an electron blocking layer provided

adjacent to the electron blocking layer and between the electron blocking layer and the anode.

In the same field of endeavor, Wolk (554) teaches a transfer layer containing two layers both of which can be an electron blocking layer (Paragraph [0075], lines 1-15) in order to that the important interfacial characteristics of the layers can be produced when the transfer unit is prepared and retained during transfer (Paragraph [0073], lines 1-6). Also, Paragraph [0007], lines 1-6 teaches that the transfer layers are between the anode and the cathode.

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to incorporate the two adjacent electron blocking layers as taught by Wolk into the electroluminescent element of Motomatsu, as modified by Thompson (528) and Kim(621), in order to that the important interfacial characteristics of the layers can be produced when the transfer unit is prepared and retained during transfer.

Regarding Claim 21, Motomatsu, as modified by Thompson (528) and Kim(621), fails to exemplify the organic electroluminescent element wherein the organic electroluminescent element further comprises a hole blocking layer provided adjacent to the hole blocking layer and between the hole blocking layer and the cathode.

In the same field of endeavor, Wolk (554) teaches a transfer layer containing two layers both of which can be a hole blocking layer (Paragraph [0075], lines 1-15) in order that the important interfacial characteristics of the layers can be produced when the transfer unit is prepared and retained during transfer (Paragraph [0073], lines 1-6).

Also, Paragraph [0007], lines 1-6 teaches that the transfer layers are between the anode and the cathode.

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to incorporate the two adjacent hole blocking layers as taught by Wolk into the electroluminescent element of Motomatsu, as modified by Thompson (528) and Kim(621), in order to that the important interfacial characteristics of the layers can be produced when the transfer unit is prepared and retained during transfer.

Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Motomatsu (909) in view of Thompson (528) and further in view of Thompson et al (US Patent No. 6,951,694) (previously cited).

Regarding Claim 35, Motomatsu, as modified by Thompson (528), fails to exemplify the organic electroluminescent element emitting white light.

In the same field of endeavor, Thompson (694) teaches Column 20, line 40 white light emission that is of high quality and voltage independent.

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to incorporate the white light of Thompson (694) into the electroluminescent element of Motomatsu, as modified by Thompson (528)in order to have a high quality and voltage independent emission.

Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Motomatsu (909) in view of Thompson(528) and further in view of Lamansky et al (US PG Pub. No. 2002/0182441) (previously cited).

Regarding Claim 38, Motomatsu, as modified by Thompson(528), fails to exemplify a display comprising a liquid crystal cell and the illumination device.

Lamansky teaches in (Paragraph [0010], lines 14-15) using illumination devices (organic light emitting devices (line 1)) in liquid crystal displays because of their bright colors, wide viewing angle and low power requirements.(lines 9-12)

It would have been obvious to one of ordinary skills in the art, at the time of the invention, to incorporate the illumination device of Motomatsu in the liquid crystal device of Lamansky, as modified by Thompson(528), to provide bright colors, wide viewing angle and low power requirements in the liquid crystal device.

Claims 39 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Motomatsu (909) in view of Thompson (528) and Kim(621) and further in view of Thompson (694).

Regarding Claims 39 and 43, Motomatsu, as modified by Thompson (528) and Kim(621), fails to exemplify the organic electroluminescent element emitting white light.

In the same field of endeavor, Thompson (694) teaches Column 20, line 40 white light emission that is of high quality and voltage independent.

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to incorporate the white light of Thompson (694) into the electroluminescent

element of Motomatsu, as modified by Thompson (528) and Kim(621), in order to have a high quality and voltage independent emission.

Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Motomatsu (909) in view of Thompson(528) and Kim (621) and further in view of Lamansky (441).

Regarding Claim 42, Motomatsu, as modified by Kim, fails to exemplify a display comprising a liquid crystal cell and the illumination device.

Lamansky teaches in (Paragraph [0010], lines 14-15) using illumination devices (organic light emitting devices (line 1)) in liquid crystal displays because of their bright colors, wide viewing angle and low power requirements.(lines 9-12).

It would have been obvious to one of ordinary skills in the art, at the time of the invention, to incorporate the illumination device of Motomatsu in the liquid crystal device of Lamansky, as modified by Kim, to provide bright colors, wide viewing angle and low power requirements in the liquid crystal device.

Claim 46 is rejected under 35 U.S.C. 103(a) as being unpatentable over Motomatsu(909) in view of Lamansky (441).

Regarding Claim 46, Motomatsu fails to exemplify a display comprising a liquid crystal cell and the illumination device.

Lamansky teaches in (Paragraph [0010], lines 14-15) using illumination devices (organic light emitting devices (line 1)) in liquid crystal displays because of their bright colors, wide viewing angle and low power requirements.(lines 9-12).

It would have been obvious to one of ordinary skills in the art, at the time of the invention, to incorporate the illumination device of Motomatsu in the liquid crystal device of Lamansky to provide bright colors, wide viewing angle and low power requirements in the liquid crystal device.

Allowable Subject Matter

Claims 1-15 and 23-34 are allowable.

The following is an examiner's statement of reasons for allowance.

Regarding Claim 1, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in **Claim 1**, and specifically comprising the limitation of " a content of the phosphorescent compound contained in the hole blocking layer in percent by weight, is in the range of 0.1 to 20% of a content, in % by weight of the phosphorescent compound contained in the light emitting layer" including the remaining limitations.

Regarding Claims 2-4 and 23-26, they are allowable for the reasons given in **Claim 1** because of their dependency status on **Claim 1.**

Regarding Claims 5 and 9, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in **Claims 5 and 9**, and

specifically comprising the limitation of " a content in % by weight of the phosphorescent compound contained in the electron blocking layer is in the range of 0.1 to 20% of the content, in % by weight of the phosphorescent compound contained in the light emitting layer" including the remaining limitations.

Regarding Claims 6-8 and 27-30, they are allowable for the reasons given in **Claim 5** because of their dependency status on **Claim 5.**

Regarding Claims 10-15 and 31-34, they are allowable for the reasons given in **Claim 9** because of their dependency status on **Claim 9.**

Response to Arguments

Applicant's arguments with respect to independent **Claims 1, 5 and 9** have been considered and are persuasive. Applicant argues on page 21 of the remarks of 12/17/2009, 1st and 2nd paragraphs, that Motomatsu teaches a doped amount by volume in the luminescent layer of 5% and a doped amount by volume in the hole blocking layer of 3% which would provide a percentage by weight ratio of 60%. Examiner agrees. The rejections of **Claims 1, 5 and 9** , and their dependent claims, is hereby withdrawn and are in condition for allowance.

Regarding Independent **Claims 16, 18 and 20**, Applicant argues that it is not obvious that the amount of light emitted by the hole blocking or light emitting layer is directly related to the choice of material and amount of material used and that one of ordinary skill would not be motivated to provide the ratio of " the amount of light emitted

from the hole blocking layer that is in the range of 0.1 to 50% of the amount of light emitted from the light emitting layer" (Page 25 of applicant's remarks).

Examiner disagrees: First of all, the range provided 0.1 to 50% is extremely wide and therefore strongly suggests that the exact amount is not critical. Secondly, it is obvious that the choice of host material and dopant, their emission properties, the amount of doping ,as well as the volume or surface area of emission are all factors that contribute to the amount of emission; and are controllable and measurable by one of ordinary skill in the art. Furthermore, the lifetime of a device is easily measurable under these conditions. Concerning the motivation to provide a range below 50%, it would be obvious that if both the electron blocking and hole blocking layers had light emissions of more than 50% of the light emitting layer then the light emitted from these layers would be more than that from the light emitting layer (indicating more exciton forming substance than the luminescent layer) and could obviously cause problems with collision of excitons reducing the total emission (see Matsuo et al (US PG Pub. No. 2003/0143427), ¶ [0048]).

The rejections of these claims still stands.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DONALD L. RALEIGH whose telephone number is (571)270-3407. The examiner can normally be reached on Monday-Friday 7:30AM to 5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Donald L Raleigh/
Examiner, Art Unit 2879

/Peter J Macchiarolo/
Primary Examiner, Art Unit 2879